

Ethnobotanical Leaflets 12: 693-97. 2008.

Preliminary Phytochemical Evaluation of Certain Anticancer Crude Drugs Used by Adivasis of Rayalaseema Region, Andhra Pradesh, India

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Issued 12 September 2008

ABSTRACT

The present paper deals with preliminary phytochemical evaluation of certain crude drugs used for cancer. Based on the folklore data obtained from adivasis of Rayalaseema region, Andhra Pradesh, 15 species were collected in the forests of Eastern Ghats in the region. Three species were recorded as new formulations, which are hitherto not reported earlier. The preliminary phytochemical screening was conducted on the drug samples, and composition of various groups of constituents was discussed.

Key words: Cancer, Crude drugs, Secondary metabolites.

INTRODUCTION

Rayalaseema region lies between 12°41'-16°21' N latitudes and 17°45' - 81°10' E longitudes. The area accounts 26% of the total area of the Andhra Pradesh state and consists of four districts viz., Kurnool, Anantapur, Kadapa and Chittoor.

In every ethnic group there exists a traditional health care system, which is prevalent and popular among the community. The indigenous society has always been associated with nature for their needs with respect to health care system. The tribal communities have given first and foremost importance to their health care. The critical review of literature revealed that very little attempts were noticed (Reddy, 2008) on remedies for cancer; hence the present paper gains importance.

MATERIALS AND METHODS

The folklore information was recorded from the local tribal practitioners and from the tribal healers by conducting repeated interviews. Based on the recorded folklore information 15 species were selected as widely used crude drugs for cancer. The voucher specimens were prepared and identified with the help of local / regional floras (Gamble, 1915 – 35; Venkata Raju and Pullaiah, 1995) and confirmed by comparing with authenticated specimens housed at Sri Krishnadevaraya University Herbarium (SKU), Anantapur.

The samples were collected in bulk quantities for preliminary phytochemical screening. The collected samples were shade dried, powdered about (100g) and successively extracted with ethanol using soxhlet apparatus for 6 hours. The extracts were filtered and concentrated under reduced pressure to dryness. The extracts were subjected for preliminary phytochemical screening using standard procedures (Amarasingham et al., 1964, Das and Bhattacharjee 1970, Gibbs, 1974 and Harborne, 1991).

RESULTS AND DISCUSSION

The present paper provides information on preliminary phytochemical evaluation of certain anticancer crude drugs. The solvent extracts of the drug yielding plants were subjected for preliminary phytochemical screening. The positive reactions were observed for 17 different groups of secondary metabolites. The distribution and richness of different constituents were statistically analyzed (Table-1). The frequency and distribution of different chemical constituents were analyzed (Table – 2).

Table 1. The distribution and richness of different constituents in crude drugs used for cancer.

[illegible]

12.	<i>*Rhinacanthus nasutus</i>	Wp	-	+	-	-	+	-	-	+	-	+	-	+	-	+	+	-	-	7
13.	<i>Semecarpus anacardium</i>	Fr	+	-	+	+	-	-	-	+	-	+	+	+	-	-	-	+	-	8
14.	<i>Terminalia chebula</i>	Fr	+	-	+	+	-	+	-	+	-	+	+	+	-	+	-	+	+	11
15.	<i>*Tinospora cardifolia</i>	Wp	-	-	+	-	-	-	+	+	-	+	-	-	-	-	-	+	-	5
16.	Total		12	2	6	12	1	3	4	14	2	14	6	10	4	10	5	11	4	120

Al = Alkaloids; An = Anthocyanins; Ad = Anthocyanidins; At = Anthracene glycosides; Au = Aucubins; Aq = Anthraquinones; C = Catecholic Compounds; Co = Coumarins; F = Fatty Acids; Fv = Flavonoids; Gt = Gallic Tannins; I = Iridoids; P = Phenols; S = Saponins; St = Steroids; Tt = Triterpenoids; V = Volatile Oils.

The preliminary phytochemical analysis revealed that, coumarins and flavonoids were recorded as most common group of compounds in majority of the test samples (14 spp each, 93.3%) followed by alkaloids and anthracene glycosides (12 spp each, 80%), triterpenoids (11 spp, 73.3%), iridoides and saponins (10 spp each, 66.6%) while aucubins were noticed in one species (6%) only. Flavonoides, the major group of phenolic compounds reported for their antimicrobial (Toda et al., 1989), antiviral (Barnard et al., 1993) and spasmolytic (Amor et al., 2005), while coumarins reported for antibacterial (Fernanden et al., 1996) and antifungal (Houet and Paya, 1996)

The evaluation on the occurrence and distribution of various phytochemical compounds revealed that maximum number were found in *Curculigo orchoides* (12) followed by *Terminalia chebula* (11), *Cassia fistula* (10), *Plumbago zeylanica* and *Dregea volubilis* (9each), *Aristolochia indica*, *Entada pursaetha*, *Lannea coromandelica* and *Semecarpus anacardium* (8each), *Andrographis paniculata*, *Buchanania lanzan*, *Datura metel* and *Rhinacanthus nasutus* (7each), *Tinospora cardifolia* (5) while minimum compounds were noticed in *Anogeissus latifolia*(4).

Table 2. The frequency and distribution of different chemical constituents were analyzed.

S.No.	Name of the compound	No. of species	% species
1.	Alkaloids	12	80.00
2.	Anthocyanins	2	13.00
3.	Anthocyanidins	6	40.00
4.	Anthracene glycosides	12	80.00
5.	Anthraquinones	3	20.00
6.	Aucubins	1	6.00

7.	Catecholic Compounds	4	26.00
8.	Coumarins	14	93.30
9.	Fatty Acids	2	13.30
10.	Flavonoids	14	93.30
11.	Gallic Tannins	6	40.00
12.	Iridoids	10	66.60
13.	Phenols	4	26.00
14.	Saponins	10	66.60
15.	Steroids	5	33.30
16.	Triterpenoids	11	73.30
17.	Volatile Oils	4	26.00

The critical analysis of the data in the light of literature (Jain, 1991; Kirtikar and Basu, 1935) resulted the formation of drugs and mode of administration for 3 drug yielding plants were recorded first time, hence indicated with asterisk. The comprehensive data is provided to indicate the distribution of various groups of compounds in the respective solvent extracts. The fractionation and characterization of active principle involved in healing property is being attempted in the laboratory.

ACKNOWLEDGEMENTS

The authors are thankful to the conservator of forests and other officials of Andhra Pradesh forestry for permission and help during exploration trips.

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